

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

1 In the Matter of:
2 IE TMI INVESTIGATION INTERVIEW
3 of
4 Hugh A. McGovern
5 Control Room Operator, Nuclear
6
7
8

9 Trailer #203
10 NRC Investigation Site
11 TMI Nuclear Power Plant
12 Middletown, Pennsylvania

13 May 18, 1979
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22 NRC PERSONNEL:

23 Robert D. Martin
24 Thomas T. Martin
25 Owen C. Shackleton

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1 SHACKLETON: This is an interview of Mr. Hugh A. McGovern. Mr. McGovern
2 is a Control Room Operator, nuclear, for the Metropolitan Edison Company
3 assigned to the Three Mile Island Nuclear Power Station. The time of
4 this interview is 5:17 p.m. EDT, May 18, 1979. Present to conduct this
5 interview from the U.S. Nuclear Regulatory Commission is Mr. Robert D.
6 Martin. Mr. Martin is the Chief, Nuclear Support Section No. 1, Region II.
7 Also present is Mr. Thomas T. Martin. Mr. Thomas T. Martin is an
8 Inspection Specialist, Performance Appraisal Branch, Inspection &
9 Enforcement Reactor Construction Inspection, presently assigned to
10 Region I. My name is Owen C. Shackleton. I'm an Investigator assigned
11 to Region V. This interview is taking place in Trailer No. 203, which
12 is parked just south of the south security gate at the Three Mile
13 Island Nuclear Power Station. Just prior to the beginning of this
14 interview, I presented to Mr. McGovern a two page document from the
15 U.S. Nuclear Regulatory Commission setting forth the scope and purpose
16 of this investigation and explaining the authority of the U.S. Nuclear
17 Regulatory Commission to conduct this investigation; in addition to
18 identifying Mr. McGovern's rights to refuse to be interviewed or to
19 have someone of his choice present and to refuse to give a signed
20 statement. On the second page of this document are three questions and
21 Mr. McGovern answered all three of these questions in writing to the
22 affirmative. At this time, to make it a matter of record on the tape,
23 I'm going to repeat these questions and Mr. McGovern would you please,
24 sir, respond. Did you understand the document that I'm referring to?
25

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1 MCGOVERN: Yes, I do.

2
3 SHACKLETON: And do we in the U.S. Nuclear Regulatory Commission have
4 permission to tape this interview?

5
6 MCGOVERN: Yes, you do.

7
8 SHACKLETON: And would you like a copy of the tape?

9
10 MCGOVERN: Yes, I would.

11
12 SHACKLETON: Alright, sir. We'll provide that to you at the close of
13 the interview. And now, Mr. McGovern, to assist all the people that
14 will be listening to this tape would you please briefly give your own
15 background, education, and work experience in the nuclear field.

16
17 MCGOVERN: I entered the U.S. Navy in 1970, became a reactor operator
18 and stayed in the U.S. Navy through October 1976. At that time, I
19 became an auxiliary operator with Metropolitan Edison at Three Mile
20 Island nuclear control room. I spent approximately one year as an
21 auxiliary operator in Unit 2, and at the end of that year I bid a CRO
22 job, it's a control room operator job, and finished nine months of
23 qualifications and passed my licensing exam in November of 1978. Since
24 that time, I've been a control room operator in Unit 2.

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1 SHACKLETON: Thank you very much, Mr. McGovern. And now I'll turn the
2 interview over to Bob Martin or Tim. Do you want to start the ques-
3 tioning, please?
4

5 T. MARTIN: Hugh, I'm interested initially in what time you became
6 aware of the event and what time you arrived onsite. Would you address
7 those matters?
8

9 MCGOVERN: I arrived onsite before I became aware of the event. I
10 arrived onsite about 6:45 in the morning, the 28th, and about 6:50
11 a.m., as I was passing between Unit 1 and Unit 2, it was the first
12 indication I had of any real problems. They passed the word for a site
13 emergency.
14

15 T. MARTIN: Hugh, would you pick up at that point and describe to us a
16 sequence of what you saw, the activities that you were involved in, and
17 any comments that you might have. I will attempt not to interrupt you
18 during that sequence, but we will be taking notes so that I can come
19 back to specific points.
20

21 MCGOVERN: Okay. Like I said at 6:50 a.m. or approximately 6:50 a.m.,
22 when they passed a site emergency, I hurried to the Unit 2 control
23 room. Upon arriving at the control room, it was obvious that they had
24 a major problem of some nature or other. There were several alarms
25

1 going off and people were crowded around the console trying to control
2 various parameters. I moved to the secondary side of the control panel
3 and was assisting Len Wright. We were having problems with vacuum and
4 it was obvious that they had had a trip, that the plant was down.
5 Other than that, it was also obvious that they were starting to get
6 radiation emergency alarms on the rad monitoring panel. We were working
7 mostly in trying to maintain vacuum in the condenser. That was the
8 first thing I became involved with. One of the first actions I took
9 was, we started another set of circ. water pumps. They only had two on
10 at the time, which meant that the atmospheric dumps were controlling
11 the steam pressure. Putting an extra set on put it back into the
12 condenser, instead of allowing it to go through the atmospheric dumps.
13 That was about 7:15 a.m., I would guess. Like I say, we were having
14 problems with aux boiler Unit 1 was supplying our gland steam, and we
15 were having quite a lot of difficulty maintaining any pressure at all
16 or vacuum for our sealing steam. We got in touch with Unit 1 several
17 times trying to get all the boiler problems straightened out and then
18 keep the gland steam on. The next thing I became involved with, it was
19 about 7:30 a.m., I was involved in isolating the steam side of the
20 steam generator. That's MSB, 4B, 7B and 15B. I did this on request
21 from one of the other control room operator's from the shift that was
22 on at the time of the trip. After I did that, one of them asked me to
23 remain behind the main console area and, more or less, if they needed a
24 valve opened or an indication read, or something along those lines, in
25

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1 the back second row of panels, to do that for ... to act as a kind of,
2 you know an extra set of eyes and hands back there. That's basically
3 what I did for quite some time. Just various--would you open this
4 valve, would you check this, type functions for most of the day. One
5 of my jobs that I had was about 7:50 in the morning was I stopped the
6 spent fuel pump and isolated the BWST recirc. The A spent fuel pump
7 was recircing the BWST, and we had an ESE actuation. This was incon-
8 sistent with the spent fuel running on recirc, so we stopped the pump
9 and isolated that. At another time, I went back behind the panels to
10 the ventilation panels and started the aux's, and fuel handling building
11 exhaust fans, and put the control room on recirc.--started AHE4B,
12 that's the, actually, the filter train fan. Other things that I was
13 involved with were: I isolated HPR227 from the reactor building and
14 secured it. This was approximately 1100 hrs. I looked at the RC drain
15 tank also at that time; and, at that time, it had 0 pressure, approxi-
16 mately 225° on it. With the shift forman we attempted to restart the
17 leakage close pumps, but we couldn't get anything to go through them.
18 They were obviously air-bound or steam-bound, starting when you see a
19 discharge pressure and then the pressure would fall off, so we were
20 alternately bumping the A and then the B pump, in an attempt to move
21 some water through them and maybe get the temperature down a bit and
22 cooled off some. We didn't have any luck with that. We couldn't get
23 any pressure at all on the pumps. About, let me jump back here a
24 little bit, somewhere around I believe it was 10:00, was the first
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1 time, I'm hazy on this time, but I think it was about 10:00 that we saw
2 the first building actuation. They'd been popping the electromatic
3 relief into the drain tank previous to this time, and the pressure had
4 slowly crept up. It hit about 3.55 lbs, if I remember right. We got
5 the building actuation. When that occurred, like I say, I was back
6 behind the panels and after they defeated the building spray, which
7 merely means that it allows us to take control of the building actuation
8 systems, we reopened nuc services to the reactor coolant pumps, inter-
9 mediate closed to the control rod drive, and I believe that was it.
10 The systems that were required for operation inside the building.
11 Other things that I was involved with: about 1400 hrs, well we had two
12 building actuations, the 3.55 and then another one a couple of hours
13 later, again, because when they were popping the electromatic relief,
14 the pressure came up in the building. About 2:00 is what I gave the
15 time as I understand it was sometime earlier than that, I had a large
16 pressure transient inside the reactor building. I started the building
17 spray pumps, the building actuation occurred, and spray water was going
18 into the building. We looked at the spikes, while it went straight up
19 and down, and one of the operators secured the building spray pumps and
20 I shut the DHB8's, which are the sodium hydroxide valves to the building
21 spray line, and the BSBl's which are the actual spray valves into the
22 building. Then again, we unisolated nuc services to the reactor coolant
23 pumps, and intermediate close to the CRDMs. About 3:00 p.m., I helped
24 at the panel itself. I moved from behind the panel to the main console
25

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1 area, and at that time, we had hot legs, both hot legs had bubbles in
2 them. We realized this because they were both pegged out greater than
3 620°. The pressurizer was solid and we had the A makeup pump running.
4 We were using MUV16B and MUV17 were the injection pass. 16B was throttled
5 at about 100gpm, and 17, we were just watching the makeup tank, more or
6 less. There wasn't much pressure. We were trying to control both and
7 get water into the system. We did succeed in collapsing the A-loop
8 bubble. We saw this by the hot leg temperature in the A-loop came down
9 from 620; I don't remember what it dropped to, it's on the graphs, but
10 it dropped sharply down. We figured we were successful in collapsing
11 the A bubble. So we stopped with the 16B valve and started MUP1C, and,
12 hoping ... MUV16C, trying to collapse the bubble on the B side. When
13 we did that, it must have diverted enough flow, I don't know why, but
14 anyway the temperature on the A hot leg went back up and pegged again.
15 So we stopped with the B-loop and we weren't very successful with that,
16 went back to the A and collapsed it again. This time we saw a really
17 sharp temperature drop and we actually had a decrease in pressurizer
18 level, indicating that we had cooled down that section of the piping
19 enough that the water was in the hot legs again, and, in fact, we
20 actually had level back on scale in the pressurizer. We did that for
21 awhile until we got to about 180 inches in the pressurizer and we
22 stopped injecting at that time, because of the level in the pressurizer.
23 We fed that back up and then continued spraying. That's basically what
24 I was involved with for most of the time. I did a couple of auxiliary
25

1 functions. At noon, I filled the 50K tank, the demineralized water
2 storage tank to 10 feet. That was done using water from Unit 1. Also,
3 they asked me to check and see what was relieving outside. I went
4 outside, and at that time, the A atmospheric dump was blowing out the
5 top; that was all that was going out. That's pretty much all that I
6 was involved with.

7
8 R. MARTIN: About what time was the atmospheric dump?

9
10 MCGOVERN: This was roughly noon. I can't give you more precise data
11 than that. I made the run outside. I filled the 50K tank and at the
12 same time I checked that.

13
14 R. MARTIN: That would just finish out the day. About what time of day
15 did you leave the site?

16
17 MCGOVERN: Roughly, 5:00 or 6:00 in the evening. It's kind of rough to
18 say. When I left the site here, they were taking people offsite to
19 decontaminate and I finally got out of there about 7:30, I guess.

20
21 R. MARTIN: Was that done at the observation center?

22
23 MCGOVERN: It was at the 500KV substation.
24
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1 R. MARTIN: Okay. Then you left before they asked you about the 2B-2A
2 re tor coolant pump in operation.
3

4 MCGOVERN: That's correct. When I left there were no pumps running.
5

6 R. MARTIN: Had there been, were you aware, when you were on the front
7 side of the panel of any decisions or talk going on that they were
8 preparing to run the system up solid and try to get a pump running?
9

10 MCGOVERN: No sir. I really wasn't aware of their overall plan of
11 attack. It was more or less, the shift foreman and the shift supervisor
12 giving directions on a moment-by-moment type of thing. You know, open
13 an electromatic relief, starting EP1C, open 16C, directions on that
14 nature.
15

16 R. MARTIN: Were you relieved by someone else coming in on an incoming
17 shift in the later part of the day?
18

19 MCGOVERN: I was actually relieved by the day shift operators. I was
20 on the relief shift. The day shift operators actually took over the
21 control room plant at that time.
22

23 R. MARTIN: That would have been? 7:00, 8:00, 9:00 in the morning or
24 much later in the day?
25

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1 MCGOVERN: Sir?
2

3 R. MARTIN: Was that in the morning or ...
4

5 MCGOVERN: No, I was actually... Well, I wasn't on shift for any
6 period of time. As a relief shift operator, he carries out his order
7 functions, mostly surveillance testing, and I just happened... Our
8 relief shift is scheduled from 7:00 until 3:00 in the afternoon, and
9 coming in at 7:00, I immediately became involved in what was going on.
10

11 R. MARTIN: Okay. That clarifies that. I was thinking of you coming...
12 I didn't realize you were coming in as a relief shift operator and I
13 had visions of you doing auxiliary functions, while someone else was
14 taking your normal control station.
15

16 MCGOVERN: No, sir.
17

18 T. MARTIN: I would like to go back now to the beginning and focus in
19 on some specific events; try to walk you through the sequence in picking
20 your brains. At approximately 6:50, site emergency; you are between
21 Unit 1 and 2; you make your way to Unit 2 and you move to the secondary
22 panels. Who was manning the panels at that time?
23
24
25

1 MCGOVERN: Len Wright was on the secondary panel at that time. He was
2 one of the day-shift operators, scheduled to come in on day-shift, and
3 I believe he had just arrived in the control room shortly before I did.
4

5 T. MARTIN: What was the status of the plant as you arrived?
6

7 MCGOVERN: The reactor was tripped, the turbine was tripped. Specifics:
8 various alarms on the rad monitoring panel were just beginning to come
9 in; the turbine was, like I say, it was tripped and we were on two
10 circ. water pumps on the secondary side; we were having problems with
11 gland steam, vacuum problems. Other than that, I really didn't focus
12 in on the primary side or any part of the primary panel. I just went
13 to the first panel in front of me and started helping out.
14

15 T. MARTIN: Do you know whether the reactor cool pump was operating
16 when you arrived?
17

18 MCGOVERN: No, sir, I don't.
19

20 T. MARTIN: You indicated we had a problem with vacuum associated with
21 gland seal. Was this because the aux boiler in Unit 1 had tripped?
22
23
24
25

1 MCGOVERN: I'm not sure if the boiler had tripped or if it was just
2 producing poor steam or low quality steam at the time. When I came in
3 he had 40 or 50 lbs gland steam pressure, normal is about 120-130. I
4 think that he was still producing steam but it wasn't up to capacity
5 and that was basically the problem we were having.
6

7 T. MARTIN: Was there any discussion of a problem with the hot well
8 level at this time?
9

10 MCGOVERN: Not to my recollection, right off the top of my head, no.
11

12 T. MARTIN: What did you do to assist Mr. Wright in recovering from
13 this vacuum problem?
14

15 MCGOVERN: One of the things I did, was, like I said, I started the
16 second set of circ water pumps. Another thing was I called over to
17 Unit 1 and talked to one of their operators and explained that we had a
18 very grave situation and we needed those aux boilers for aux steam for
19 the gland steam.
20

21 R. MARTIN: What was their response?
22
23
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1 MCGOVERN: They said that they would get an operator on it right away.
2 And I believe, in fact, they sent the shift foreman down to check on
3 that. I'm not exactly sure what they did over there.
4

5 R. MARTIN: Do you know what the status of Unit 1 was at that particular
6 time?
7

8 MCGOVERN: They were shut down. They were in the middle of their
9 refueling outage. I believe they were just getting ready to come back
10 up but they hadn't started.
11

12 R. MARTIN: There was no steam available from Unit 1.
13

14 MCGOVERN: No, Unit 1 could not supply steam off their reheat steam.
15 It was definitely just aux boilers.
16

17 T. MARTIN: From where you were standing, could you see the source
18 range monitor that was mounted up on top of the main console?
19

20 MCGOVERN: No sir, I couldn't. Well I could of if I had focused in on
21 it, but I really didn't. Like I say, I was more or less concentrated
22 on the one side. There were other operators there; there was a shift
23 supervisor; a shift foreman there. They were concentrating on the
24 primary and I was trying to help out where I could.
25

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1 T. MARTIN: Are you aware of any emergency borate that was conducted in
2 this period of time?
3

4 MCGOVERN: I don't remember whether they started the boric acid pumps
5 or not, to tell you the truth. That again was on the primary side and
6 I was on the secondary.
7

8 T. MARTIN: Within approximately 15 minutes, it was... apparent you had
9 assisted in isolating the B steam generator on the steam side. What
10 was the basis for that action?
11

12 MCGOVERN: I believe at that time, they had determined that they had a
13 tube rupture in the B steam generator. I'm not sure exactly what they
14 came to or how they came to that conclusion. You know, I arrived in
15 the middle of the things; it's kind of tough to get to ... what they
16 were doing and why at the time. But, when the shift foreman directed
17 me to, yes I did, I shut the steam isolations for him.
18

19 T. MARTIN: Hugh, as I reconstruct it at this point, as you arrived,
20 they had problems with the vacuum; apparently they were already using
21 the atmospheric dumps. I have heard from other interviews that they
22 were steaming both A and B steam generators at that time; obviously B
23 must have been functioning because you didn't isolate it until 7:30.
24 Did you hear any reports of high radiation alarms on the off-gas monitors?
25

1 MCGOVERN: Like I said, when I came in, they were just beginning to get
2 all sorts of alarms, radiation monitor type alarms (unintelligible)
3 whether VAR748 the off-gas monitor was more or not, I'd be hard put to
4 tell you, but I believe the problem was going on at that time. The
5 entire board was pretty well lit up.
6

7 T. MARTIN: .Alright Hugh. Sometime after this you then moved around to
8 the back panels and you indicated that you operated valves and switches
9 and directed. Can you give us some examples of valves and switches you
10 operated, and if possible, in the sequence that they were operated?
11

12 MCGOVERN: I gave you one example. The spent fuel pump was running on
13 BWST recirc, stopping that and isolating that. One of the other func-
14 tions I carried out was the high pressure injection of the valves, the
15 MUV16 valves are located on the front console; however, HP injection
16 flow is on the back panel. So for them to throttle it, the HP injection
17 flow and set it at certain... 250gpm per leg, then they have to have
18 somebody back there to read those gauges and I did that for them on
19 several occasions. Throttled them down to 100 gallons per minute or
20 200 gallons per minute, depending on how many pumps they had running
21 and what they were trying to do at the time.
22
23
24
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1 T. MARTIN: Hugh, the flow of the HP injection is very important to us.
2 When you initially moved to the back panel, how many HPI pumps were
3 operating. Do you know?
4

5 MCGOVERN: I believe they were running two pumps. I believe A and C
6 were running. I might be off on that, but that's the sequence. When
7 you get an ES actuation, you get the A & C pump start, the B pump
8 trips. I believe that's the way it was at the time.
9

10 T. MARTIN: Hugh, as you were sitting on the back panel, what kind of
11 flows were they trying to maintain?
12

13 MCGOVERN: Approximately, 250 gallons per each leg, 250 gpm for each
14 leg. When they were running just one pump then the total flow was 500
15 gpm; when they were running the two pumps then they were running 1000
16 gpm.
17

18 T. MARTIN: They were always running at, essentially run-out or just
19 not quite run-out, just before the pumps running out, when they were
20 operating the pumps.
21

22 MCGOVERN: No, that's not correct. 250 gpm design flow, and as far as
23 always... No they weren't always at 250 gpm. Sometimes they back them
24 down to 200. I'm not sure what their criteria was. I believe they
25

1 were watching pressure and pressurizer level and trying to control
2 those. More or less, he was timing it. You know, the control room
3 operator was saying things like I want to throttle 16B for 200gpm. I
4 watched the gauge for him and tell him when it got there.
5

6 R. MARTIN: Let me interject just for a moment. Am I mistaken that on
7 to the left of the rod control panel where the makeup pump switches are
8 located; are there not flow gauges there on the vertical section of the
9 desk panel.
10

11 MCGOVERN: No sir. There are not. Not for high pressure injection
12 flow. There are for seal injection flow and there's a normal makeup
13 flow gauge there, but there is no high pressure injection through the
14 MEV-16 lines. That's on the back panel.
15

16 T. MARTIN: At any time during this event was HPI secured?
17

18 MCGOVERN: I would be hard pressed to tell you that, sir. Again, I
19 wasn't the controlling CROs. I was, more or less, just acting as
20 another set of hands and eyes and watching various parameters ... I
21 would say, no. On the basis of what I saw, at one time or another,
22 they were either running the A pump or the A and C pump combination,
23 and whenever they were doing that they had 16B throttle open.
24
25

1 T. MARTIN: We talked about operation via spent fuel recirc and the
2 isolation of that; we talked about the throttling of HPI. Were there
3 any other things you were doing at the back panel that might be of
4 interest to us?
5

6 MCGOVERN: No, that's pretty much it. I was watching various other ...
7 I really don't think that, you know, it's more watch this, watch that
8 type thing. So I watched BWST level a couple of times, which of course
9 was coming down; checked various monitors, why is this monitor doing
10 this, one thing or another, but that's basically what I was doing.
11

12 R. MARTIN: To give me a little bit of perspective on how busy you
13 were, or that is, how actively you were moving from one station to
14 another at the back panel--when you were at the back panel was there
15 any particular portion of the panel that you were stationed at or were
16 you pretty much roving wherever you were needed behind the back panel?
17

18 MCGOVERN: No sir. I basically tried to station myself near the contain-
19 ment isolation controls after the first building actuation, because
20 that was what they were trying to get back right away. As soon as they
21 had gotten building actuation and had defeated the signal, then I was
22 on isolating, like I say, mixers just for reactor coolant pumps and
23
24
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1 intermediate close for the CRDMs. So I was basically hovering in that
2 area, but I was by no means confined to any particular area, and was
3 moving across the entire range of the back panels.
4

5 R. MARTIN: And let me ask another point, to make sure that I understand
6 physically where you were located. When you are saying you are at the
7 back panels, I have a mental image of you being behind the panels, that
8 is, in that portion where the reactor coolant drain tank is stationed.
9

10 MCGOVERN: No, sir.
11

12 R. MARTIN: Are you speaking of the vertical panel?
13

14 MCGOVERN: That's correct. The vertical panel is behind the front
15 console and we have two rows; we have the front console and the upright
16 vertical panel. I was at the vertical panels.
17

18 R. MARTIN: Thank you.
19

20 T. MARTIN: You discuss some switching that you did in the ventilation
21 system. I am not conversant in the valve numbers and the equipment
22 designations used, so could you take us through that ventilation changes
23 that you made?
24
25

1 MCGOVERN: The only real changes that I made were: I started the aux
2 building exhaust fans and the fuel handling building exhaust fans and I
3 put the control building, the control room on recirc, by starting the
4 AHE4B which is a, it's just a small fan that pulls air through the
5 filter string. By starting that it throws the control room in a recirc
6 mode with a 1500 scfm input and the rest in on recirc. That's all I
7 had to do with ventilations, started about three fans, four fans.

8
9 R. MARTIN: Is it normal that the aux building fans and the fuel handling
10 building fans, exhaust fans, would not be operating routinely.

11
12 MCGOVERN: No, sir. They're normally on. We do have problems with
13 them tripping on thermals occasionally, but I'm not sure if somebody
14 shut them off previous to this time or not. It was just one of those
15 things that came up. One of the shift foreman, like I said, was taking
16 directions from various people, and one shift foreman came up and said
17 would y u mind starting the auxiliary plot and fuel handling building
18 exhaust fans and that took care of it.

19
20 T. MARTIN: If the auxiliary building fan had tripped on thermals could
21 you have started from the control room as you did?

22
23 MCGOVERN: Yes, sir. If the thermals had cooled and reset.
24
25

1 T. MARTIN: They do automatically reset then?
2

3 MCGOVERN: They're, I forgot the type, Magnetic Overloads, I don't
4 remember the exact type, but yes they can be reset.
5

6 T. MARTIN: You indicated that you, in essence, shifted the control
7 building ventilation to recirc. Was this before or after they found
8 themselves in respirators?
9

10 MCGOVERN: It was ... I'm hard put for that too. I don't remember the
11 exact time we went in respirators but I believe it was before. I'm not
12 exactly positive on that.
13

14 T. MARTIN: Doesn't the control building ventilation system automati-
15 cally shift to recirc on a radiation level alarm?
16

17 MCGOVERN: Yes, sir. HPR220 is supposed to shift it into recirc. I
18 don't know if somebody had gone back and stopped it. I don't remember
19 the status of the fan at the time. I don't remember if it was "pull
20 the lock" or if it was still in auto; but, like I say, I do remember
21 going back and actually starting the fan and the damper shifting into
22 the recirc. position.
23
24
25

1 T. MARTIN: Hugh, in your discussion of sequence, you then mentioned
2 some effort or some work that you did, and I believe I heard RC leakage
3 pumps. Is that correct?
4

5 MCGOVERN: Leakage closed cooling pumps, yes.
6

7 T. MARTIN: Again, our problem with nomenclature. Would you explain
8 what these are?
9

10 MCGOVERN: Okay. These are pumps that circulate the water through the
11 RC drain tank and through the leakage closed coolers. The leakage
12 closed coolers are in turn cooled by the decay heat closed, using the
13 decay heat closed cooling pumps, the DCP2s. The problem we were having
14 was that the tank had flashed. It was 220-225°, 0 pressure, the rupture
15 disk had blown and in attempting to start the pumps, like I said, you
16 could see the discharge pressure start to come up and then drop, indi-
17 cating that there was no water in the suction pump.
18

19 T. MARTIN: What was the purpose of attempting to start these pumps?
20

21 MCGOVERN: Attempting to cool the RC drain tank down was basically the
22 function. We were just trying to get the water recirculating through
23 that cooler which is inside the building. We just closed the cooler to
24 see if we couldn't bring the temperature down some, prevent it from
25 flashing on.

1 T. MARTIN: Had the reactor coolant drain tank been lined up to pump it
2 to the reactor coolant bleed tank in the auxiliary building. Was that
3 line up still in existence when you were trying to run these pumps?
4

5 MCGOVERN: The lineup goes through WDLV-1118, which is a jog-type
6 valve. What it actually does, is it taps off the discharge of these
7 leakage closed pumps and goes into the bleed tank letdown line. WDLV1118
8 was shut at the time; however, the rest of the lineup downstream of it
9 is normally left open, because that's the same path that the normal
10 letdown path goes into, or excuse me, bleed path from the makeup system
11 into the RC bleed tank system. Normally on unisolated. But the 1118
12 was shut.
13

14 T. MARTIN: Your knowledge of the position of this particular valve was
15 based upon what indication?
16

17 MCGOVERN: There is an indication on the control panel, on the RC drain
18 tank control panel.
19

20 T. MARTIN: Is that a position indication or a demand position?
21

22 MCGOVERN: It's a position indication.
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_____ right. Hugh, approximately at 10:00, we had a building isolation, and you were involved in reestablishing certain flow paths so that the equipment in the reactor building could still be operated. Would you again cover those items that you reopened?

MCGOVERN: The ones I remembered were the nuc services to the reactor coolant pumps which supply nuc services to the lube oil coolers and the air coolers for the reactor coolant pumps; and the intermediate close to the control rod drive stators. That's what we unisolated; we were obviously trying to keep the pumps cool and the CR nuc stators from overheating.

R. MARTIN: In your first comment of the first building actuation, you did mention the actuation of the sprays.

MCGOVERN: No sir. That wasn't on the first actuation.

R. MARTIN: I want us to make sure of that. You did mention also the second actuation.

MCGOVERN: Yes, sir.

R. MARTIN: But you did not indicate that there was any spray actuation on the first...

1 MCGOVERN: No, sir. There was no actuation until, (I'm bad on the
2 time) I believe, I thought it was around 2:00. I've been told since
3 then on the charts that it was earlier than that.
4

5 MCGOVERN: Well, what can I say. Plus or minus 10 minutes.
6

7 T. MARTIN: Try to glean from you maybe something that you picked up
8 off the side. At approximately 10:00, we had a pressure of 2000,
9 2100 lbs. in the primary system. We were controlling pressure in the
10 primary system by cycling some mechanism on the pressurizer. Do you
11 know, for a fact, what that thing was?
12

13 MCGOVERN: I'm not sure if they were cycling the vent valve or the
14 electromatic relief.
15

16 T. MARTIN: Okay. When you refer to the vent valve, are you talking
17 about the small line, the pressurizer vent.
18

19 MCGOVERN: The RCV137, the vent line.
20

21 T. MARTIN: To your knowledge was that vent line ever used during this
22 event?
23

24 MCGOVERN: Like I say, I'm not sure what they were using when they were
25 depressurizing or attempting to control the pressure level.

1 T. MARTIN: Alright, thank you. Okay, you indicated that you did
2 establish the cooling flow to the reactor coolant pumps following this
3 building isolation. Was that related at all to any desire to restart
4 reactor coolant pumps during this period of time.
5

6 MCGOVERN: I'm not sure if that was the big picture on it or not. More
7 or less, it was a, like I say, again I was given instructions to unisolate
8 nuc services, direct cooling pumps, unisolated they reclosed. I think
9 they were more interested in the fact that the system was still hot,
10 and they wanted to avoid damage to the pumps or the CRDM stators, due
11 to the fact that we still had hot water in the system. I can't really
12 tell you for sure, if they were restarting them or not.
13

14 T. MARTIN: Wouldn't the building isolation have shut letdown?
15

16 MCGOVERN: Yes, it would have.
17

18 T. MARTIN: Did anyone ask you to assist in reestablishing normal
19 letdown?
20

21 MCGOVERN: That's not required. You can unisolate a letdown from the
22 front console. I don't have to do that from the back panel.
23
24
25

1 T. MARTIN: Alright Hugh. Approximately 11:30, apparently the decision
2 was made to depressurize the plant and go down on the decay heat or to
3 go down to core flooding. Were you aware of that decision being made?
4

5 MCGOVERN: Yes, like I say, I was in the back watching various parameters
6 and I remember them talking about trying to put the system on a core
7 flood flow, more or less, allowing the core flood tanks to dump into
8 the system and maintain the flow inward. At that time they asked me to
9 watch the levels on the core flood tank, so I was aware that they were
10 trying something along those lines.
11

12 T. MARTIN: At that this time, we will change the cassette. The time
13 is now 5:55 p.m., EDT, and we will resume in just a few minutes.
14

15 SHACKLETON: This is a continuation of the interview of Mr. Hugh A.
16 McGovern. The time is now 6:58 p.m., pardon me 5:58 p.m., EDT. Please
17 continue.
18

19 T. MARTIN: We were discussing the decision to depressurize to go down
20 to the core floods or decay heat. Do you remember any discussions in
21 the control room, the basis for this decision?
22
23
24
25

1 MCGOVERN: I think at that time they were worried about, as I said
2 before, the hot legs being steam saturated, bubbles in the hot legs;
3 they were worried about getting the water into the core. We weren't
4 sure that we were getting the water in with HP injection. At least,
5 that was the basic idea I got, and they were looking for all three
6 means of putting water into the core.
7

8 T. MARTIN: At approximately 1:00, we reached around 500-450 lbs. You
9 apparently were instructed to watch the levels in the core flood tanks.
10 What did you see?
11

12 MCGOVERN: At that time, I believe that was the time that we were
13 actually getting some water from the core flood tanks, we did see some
14 drop in level. I believe they dropped to like 10 ft from the starting
15 point of 13 ft, and after that indication, it became fairly erratic,
16 one of the levels would be going up at the time the other level in the
17 same tank would be going down. Pressures in the tank were not equalized
18 at all; two pressure taps on each tank and they'd read different pres-
19 sures.
20

21 R. MARTIN: Were they equalized before the start of the...
22

23 MCGOVERN: At the start of the transient, the tanks were approximately
24 13 ft, and right around 600 lbs. They were, in fact, equalized, yes.
25

1 R. MARTIN: So you say after you had some discharge of the core flood
2 tanks into the vessel, the difference between readings--are you speaking
3 of taps, redundant taps on the same vessel, or differences between the
4 two vessels.

5
6 MCGOVERN: Yes, sir. Redundant taps on the same vessel, indicating
7 instrument problems of one nature or another.

8
9 T. MARTIN: So we indicated that we did get some drop in level in the
10 core flood tanks. What was the response in the control room, when you
11 gave them this piece of information?

12
13 MCGOVERN: It was expected. You expect when you depressurize what the
14 core flood tanks are going to dump, and it was more along the lines of,
15 okay, that's going, that's working. There wasn't room to do, jumping
16 or shouting or anything like that. It was just that, okay, let's go
17 ahead.

18
19 T. MARTIN: About 1:30, we, I believe had the same lineup and the
20 pressure wouldn't go down. It hung up about 450 lbs. Do you remember
21 any discussions about this?

1 MCGOVERN: No, like I say, after that initial shouting, we did see the
2 level going down; the instrumentation became erratic and I'm not sure
3 what the core flood tanks, you know, you could look at the gauges and
4 say, yeah they're going up and they're going down. There was no real
5 way to tell. That goes for pressure as well as the level.
6

7 T. MARTIN: At around 1:50, through other interviews, we get the impres-
8 sion that a decision was made to try to depressurize even further, to
9 get down to the point where we could use the decay heat removal system,
10 the decay heat pumps. Were you aware of such a decision, a discussion
11 relative to that?
12

13 MCGOVERN: No sir. I really wasn't involved with anything along those
14 lines. Like I say, again, I was in the back panels, and watching...
15 most of that handled from the front console. If they wanted to use the
16 decay heat system, they wouldn't have had to involve me at all.
17

18 T. MARTIN: Are you aware of anything that occurred immediately prior
19 to the time the reactor building pressure spike occurred?
20

21 MCGOVERN: Not immediately prior to, but at the same time, the same
22 time frame, we lost 232 and 242, which are busses in the auxiliary
23 building, on the 328 level. I think we put that down, more or less, to
24 the same problem that we had there was the problem that caused the
25

1 spike in the pressure switches. We, more or less, looked at it and
2 said, well the pressure came up and down like that, it must have been
3 some sort of instrument error, at least, that was my thinking at the
4 time. It jumped up and down. We lost two busses on the 328 level,
5 which is the same area where those pressure switches are located. It's
6 not exactly the same level or the same area, but it is the same level;
7 and we more or less, or at least I did, in my head, put it off saying,
8 we had electrical transient that caused the actuation.
9

10 R. MARTIN: Do you recall anyone looking at the pressure trace, itself,
11 at that time, or was just the alarms that you were reacting to.
12

13 MCGOVERN: Yes sir. Several people looked at the pressure trace,
14 including myself. I looked at it, personally; one straight vertical
15 line straight up and down the narrow ranges was completely off-scale
16 and then came back.
17

18 R. MARTIN: Did you use that as a basis in your thinking, figuring it
19 was probably a noise spike...
20

21 MCGOVERN: In my thinking I wasn't, you know, we had been venting the
22 electromatic relief and the pressure had slowly risen over a period of
23 time until we had an actuation; and my thinking at the time, there was
24 an extremely rapid rise and an extremely rapid fall, so I, more or
25

1 less, put it off to, well, we haven't had anything like this before,
2 you know, what happened now, must have been some sort of an instrument
3 error. Like I say, that was my thinking on the subject.
4

5 R. MARTIN: That's what we're looking to gain--your thinking, your
6 observation. Do you recall anything, like a thud, or anything that
7 would give you a physical sensation other than just an observation of
8 data.
9

10 MCGOVERN: No, sir. I doubt very seriously. I didn't feel anything in
11 the control building. I certainly didn't at the time.
12

13 T. MARTIN: Did it surprise you then that the reactor building spray
14 pumps came on?
15

16 MCGOVERN: No, sir. They are designed to come on with a 30 lb. signal.
17 We had two indicators that both said, yeah, it made it up enough to
18 give the actuation. It surprised me that we had a transient whether
19 electrical or pressure large enough to do that; but when we had the
20 transient, yes, we had the pressure. It did not surprise me at all
21 that the pumps came on. They should have come on.
22
23
24
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1 T. MARTIN: Aren't these supposed to be separate and redundant pressure
2 switches isolated from each other so that a single event other than
3 real pressure would not have effected all of them simultaneously.
4

5 MCGOVERN: Yes sir. That's basically true. There's three located on
6 the 328 level and one located on the 305 level. Yeah, that's basically
7 true. It should have been... You know, you think that the electrical
8 wiring would have been separated and that, and I believe, in fact, they
9 are, but at the time that was not what we were thinking, or at least,
10 what I was thinking. All I saw was the spike come straight up and
11 straight down, you say, well nothing changes pressure that fast except
12 an explosion.
13

14 T. MARTIN: You've given me a piece of information which I was not
15 aware of, the fact that we almost had simultaneous loss of busses, at
16 this time in this area. Can you help me a little bit by better identi-
17 fying those busses for a layman, and also, if you can indicate what
18 kind of things are on those busses.
19

20 MCGOVERN: Yes sir, I can. 232A and 242A. They are, more or less,
21 miscellaneous parts on panels on the 328 level of the auxiliary building.
22 The way that we knew that they had been the ones that were knocked out
23 was, we lost the waste transfer pumps, WDLPSs, from the RC bleed tanks,
24 and we lost aux oil pumps from the reactor coolant pumps, which will
25

1 also supply them from there. One more thing that I, ... at the same
2 time, we also saw, and I'm still not sure why this happened, but all
3 the area monitors on panel 12, I'm talking of gamma monitors, went out
4 at the same time. Those are all, they're part of RFPEANEB which are on
5 the 328 level of the auxiliary building. Now, again, my thinking, when
6 we saw the spike and we saw the 232-42A and those panels going out, I
7 thought we had some sort of a major transient or a fire explosion in
8 the auxiliary building on the 328 level. That was my first thought on
9 the subject. At the time, the levels in the auxiliary building were
10 too high to send anybody just waltzing in to take a look, so I wasn't
11 able to back that up with other observations.
12

13 T. MARTIN: Hugh, thank you very much. Shortly thereafter, apparently
14 you were directed to shut the spray sodium hydroxide tank suction and
15 also to isolate the spray valves. Who gave you that direction and what
16 was the basis for it?
17

18 MCGOVERN: I can't honestly remember who gave me that direction, but I
19 remember looking myself at the spray, or at the pressure gauges and
20 seeing that the pressure was back down to where it was previous to the
21 spike, and it was obvious that there was no need for the spray in there
22 at that time. I really would be hard pressed to name the name who said
23 close the valves.
24
25

1 R. MARTIN: In looking at the alarm printer which so signified the time
2 in which a number of things took place, some of the resetting of certain
3 ECCS functions which came on as a consequence of that pressure spike
4 were done fairly rapidly, but the spray pumps themselves were not clear
5 for about five minutes, were not shutdown for about 5, 5 1/2 minutes.
6 In your own mind, I presume you were doing a lot of those activities at
7 that time or was there someone else at the panel also assisting?
8

9 MCGOVERN: No sir. There was, well, all of that is done on the front
10 panel, the resetting of the ECCS, the defeating of the building spray
11 system and the pumps, themselves, are controlled from the front panel.
12 My function was to shut the BHV8s which are the, like I said, the
13 suction lines from the sodium dioxide tank, or sodium hydroxide tank to
14 the system and isolating the BSV1's which are the spray valves into the
15 building, the containment isolation valves for the building. I really,
16 you know, I don't know what the thinking was, why we didn't stop the
17 pumps right away.
18

19 R. MARTIN: Alright. So you don't think it took you five minutes
20 before you had those valves isolated.
21

22 MCGOVERN: I really, well, when they got the actuation, I had enough
23 time to walk around the front, and like I say, I personally observed
24 the spike, and somebody said something about ah the building spray is
25 on and I walked back around the back and shut the 8's, and they turned
the pumps off, and simultaneous with that was when we shut the ESV1s.

1 R. MARTIN: Thank you.

2
3 T. MARTIN: Did we inject any sodium hydroxide into the reactor building?

4
5 MCGOVERN: Yes sir. We did.

6
7 T. MARTIN: Do you have any feel for how much?

8
9 MCGOVERN: I think I did a calculation the next night--about 4,000
10 gallons.

11
12 T. MARTIN: Alright. You indicated that approximately at 3:00 p.m., we
13 had the first indication we might have collapsed one of the bubbles. I
14 think it was the A-Loop that we discussed. I would like to talk about
15 the maneuvers that were being used that ultimately affected this collapse
16 of the bubble. You indicated I believed, that the A makeup pump was
17 running.

18
19 MCGOVERN: Yes sir. The A makeup pump was running.

20
21 T. MARTIN: And what was the flow path...
22
23
24
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1 MCGOVERN: The flow path was through MUV-16A which is the A high pressure
2 inject valve. 16A or 16B, I really, I don't remember which one. They
3 both go into the A-Loop suctions, A-loop pumps, and there was still
4 flow through MUV17, which is the normal makeup path. It flows in
5 through 16B and I believe, the more I think about it, I think it was
6 MUV16A, and that way we had a flow through 16A and MUV17, which is both
7 legs of the A legs.
8

9 T. MARTIN: And we were preferentially injecting, using high pressure
10 injections if I remember correctly. Is that correct? It's true!
11 We're using the 16 valves.
12

13 MCGOVERN: That is high pressure injection! Yes, sir.
14

15 T. MARTIN: We were going only into the A-loop, not into the B.
16

17 MCGOVERN: Yes sir. At that time.
18

19 T. MARTIN: And the indication that we might have collapsed the bubble
20 in the A-loop was what?
21

22 MCGOVERN: The T_H in the A-Loop came off at 620°, and dropped rapidly
23 down. That was what we used as an indication. That was our first
24 indication.
25

1 T. MARTIN: Did you notice any change in A steam generator pressure?
2

3 MCGOVERN: No Sir. I was, more or less, on the lefthand side of the
4 console at that time. There were several operators at the console
5 throughout this, more or less, each was in a small range, a small area.
6

7 T. MARTIN: Subsequent to this, it was decided to attempt a similar
8 maneuver on the B-Loop. Who made that decision?
9

10 MCGOVERN: I believe it was the shift supervisor at the time. I really
11 can't remember if Bill Zewe was on then or if the night shift supervisor
12 had come in.
13

14 T. MARTIN: Would you explain how this was attempted, what the lineup
15 was, what pumps were used.
16

17 MCGOVERN: Yes sir. We left the A lineup basically the same as it was
18 before; MUP1A was running; the 16A valve and through MU17, and in
19 addition, water was drawn from the BWST borated water storage tank
20 through MUP1C which we started and through MUV16C, which is the high
21 pressure inject line into the B side. That's basically what we were
22 trying to do.
23
24
25

1 T. MARTIN: So, at this time, we had flow going through both loops. Do
2 you remember the flow rates that we were using through the different
3 injection legs?
4

5 MCGOVERN: I believe that they were up to 100gp through the HP inject
6 lines and through the MUV17 I don't remember the flow rate through
7 it.
8

9 T. MARTIN: The result of this maneuver was what?
10

11 MCGOVERN: We lost all the advantage we had gained in the A leg. The A
12 hot leg pegged back out again.
13

14 T. MARTIN: What did you then do? What were you then directed to do?
15

16 MCGOVERN: Stop MUP-1C, the second makeup pump, and isolate high pres-
17 sure injection to the C side and concentrate on the A leg. We did that
18 again. Again, we got the hot leg to collapse, the bubble to collapse,
19 and, as I mentioned earlier, that's at the point where we started
20 seeing pressurizer level again. There was obviously enough collapse
21 inside that leg that we were drawing water from the pressurizer into
22 the hot legs.
23
24
25

1 T. MARTIN: Hugh, from this point on, we discontinued injecting into
2 the A-loop. Is that the truth?
3

4 MCGOVERN: From this point on, it was very shortly after this, that I
5 did leave for, more or less, was away from the console. I was, more or
6 less, relieved and left on my own. I believe we stayed with the A
7 until we got to 180 inches on the pressurizer, at which time we throttled
8 down, I don't remember if we actually stopped the injection or not and
9 we were attempting to get water into the makeup tank, or into the
10 pressurizer.
11

12 T. MARTIN: Subsequent to this you left Unit 2 control room and went
13 outside.
14

15 MCGOVERN: Right. I stayed for a little period of time after that, not
16 very long afterwards, more or less, watching, making sure that everybody
17 was, more or less, at one spot or another and more or less that all the
18 bases were covered. And then after that, yes, I did leave.
19

20 R. MARTIN: Do you recall the period after the core flood tanks were
21 utilized and you were sitting probably in the 450 lb range, whereby a
22 flow path was established or injecting water into the core flood tanks
23 for the purpose of somehow getting that through the core.
24
25

1 MCGOVERN: No, sir. I don't remember any attempt being made, like that
2 at all.

3
4 T. MARTIN: You're not aware of any abnormal or bastard type arrangement
5 having been hooked up.

6
7 MCGOVERN: No, sir.

8
9 T. MARTIN: You stuck pretty much with conventional flow paths, conven-
10 tional injection points, and conventional treating of the core flood
11 tanks.

12
13 MCGOVERN: Yes, sir.

14
15 T. MARTIN: Were you in the control room or in that general area at the
16 time they started to repressurize the reactor coolant system?

17
18 MCGOVERN: I was in there at that time. As I've indicated earlier, I
19 was there at the time we finally collapsed the A hot leg and it was
20 pressurized at that time. I don't remember specifically when they did
21 this; it was sometime during the day when I was there.

1 T. MARTIN: I was curious if you recall, or happened to be in position
2 to notice that after the tanks discharged from 13 ft down to about
3 10 ft, I think you thought you remembered, and then started oscil-
4 lating; when you speak of erratic behavior, are you speaking only of
5 the difference in the redundant level instrumentation behavior or did
6 you see any fluctuation of tank level?
7

8 MCGOVERN: I'm speaking of two levels on the same tank disagreeing by a
9 large margin.
10

11 T. MARTIN: The margin being...
12

13 MCGOVERN: Well like, one would indicate, one of the tanks would indicate,
14 these are just numbers I'm pulling out, because I really don't remember
15 the exact numbers, but I remember a 3 or 4 ft difference. Like one
16 would say 10 ft and the other would say 14, or something along those
17 lines.
18

19 T. MARTIN: Did both tanks behave the same way?
20

21 MCGOVERN: Basically, yes. I think one of the indicators, I think it
22 was the B side, both of the instruments just plain failed to approxi-
23 mately 7 1/2 ft midscale in the indication and just stayed there. On
24 the A side, there was, like I say, the wide difference. I may have
25

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1 those backwards. It may have been on the A side there was 7 1/2 and
2 the other one was the difference across them, but, yes, they were both
3 very erratic.
4

5 T. MARTIN: When you say the one side which you are not sure of, I
6 think you used the expression, failed to 7 1/2 ft...
7

8 MCGOVERN: I indicate failed because they were not going up; they were
9 not going down. They both indicated exactly the same in midscale
10 position.
11

12 T. MARTIN: Do these instruments upon failure, are these amongst the
13 class of instruments that are sort of programmed to fail to a midpoint?
14

15 MCGOVERN: Yes sir. I believe they are.
16

17 T. MARTIN: Again, let me pursue. In the one instrument that you had
18 some, all be it they were different in reading, but at least you felt
19 they were responding in some fashion to signal, was there any evidence
20 of an oscillatory behavior, such that the tank level seemed to be going
21 up and down, or was your attention really directed just to the difference?
22
23
24
25

1 MCGOVERN: No, it wasn't so much that they were oscillating. It was,
2 more or less, the difference. Two level taps on the same tank, 180°
3 apart, shouldn't be indicating 4 ft apart. That's why I say I believe
4 they were failed.
5

6 T. MARTIN: Do you happen to recall from any of your instrumentation
7 lectures or from whatever source of information, if the, alarm printer
8 apparently does indicate one of the core flood levels, and the alarm
9 printer for that period of time shows some alarms that the, for the A
10 core flood tank. Do you have any idea which of those two level taps
11 might be used to feed the alarm printer?
12

13 MCGOVERN: No sir. Not off the top of my head. I can't pull that out.
14 I have that information available to you. I could look it up on prints
15 and find it, but...
16

17 T. MARTIN: I was just wondering if you recall.
18

19 MCGOVERN: No.
20
21
22
23
24
25

1 T. MARTIN: Do you recall the levels in those tanks going up substan-
2 tially? The reason I'm asking this is before you left the control
3 room, when they were undergoing the start of the repressurization
4 system, did you happen to notice whether or not the core flood tanks
5 gave any evidence of water being driven back into them?
6

7 MCGOVERN: No sir. I think by that time, as I said before, the indica-
8 tions were, at least in my viewpoint, very erratic and probably failed.
9 I wasn't paying a whole lot of attention to them after that initial
10 dump when we did see the level go down to about 10 ft. When they
11 became erratic and started acting up like that, I was, more or less,
12 concentrating my efforts elsewhere.
13

14 T. MARTIN: Thank you.
15

16 R. MARTIN: Hugh, Tim Martin, we are going to leave the sequence here
17 momentarily. I have some questions about normal turbine trip. Have
18 you ever been in the control room at an actual trip?
19

20 MCGOVERN: Yes sir, I was.
21

22 R. MARTIN: Do you remember when this was?
23
24
25

1 MCGOVERN: Yes sir. It was approximately March or April of last year,
2 1978.
3

4 T. MARTIN: I remember correctly, shortly after initial criticality, we
5 had a very similar trip. In fact, this is almost the anniversary of
6 the same trip. Were you the control operator at that time?
7

8 MCGOVERN: No sir. As a matter of fact, Ed Frederick was the control
9 room operator at that time. I was on shift at that time, and I did
10 participate to some small degree. At that time, I'd been a CRO for,
11 well a CRO trainee for about 2 months. I was not licensed, and I was
12 more in a training status, but yes, I was in the control room at that
13 time.
14

15 T. MARTIN: I'd like to give you a hypothetical situation. I'm going
16 to put you as a CRO on the panel. You're in charge of the primary
17 plant and we are at high power; we've had a turbine trip. I'm trying
18 to find out the things that your procedure, that you know of, would
19 force you to do--the immediate action is what I'm interested in. I'm
20 not so much interested in your training aspect, but I'm really interested
21 in how much you guys had to do to get this thing down.
22
23
24
25

1 MCGOVERN: A turbine trip in itself is not, well obviously it's a major
2 incident; however, it is not that difficult a procedure to carry out.
3 More or less, what it involves you doing is checking that the generator
4 breakers did trip and the field breaker did trip, which is a yes they
5 did type function. The biggest function that you have to carry out of
6 any of them really, is to insure that the ICS of any stations were in
7 hand, that the ICS, that you, in fact, run them back. You take on the
8 function of the ICS system. The ICS system is designed to run the
9 plant back on its own, but should it not do so, or if one of the stations
10 was in hand that would be your function. That's a major function.
11 Also, when you trip the turbine, the pressure in the primary system is
12 going to go up. You can sit there, and usually we'll have an operator
13 that will head for the primary side and monitor pressure, and maybe
14 spray down, to help control pressure or, you know, whatever he feels is
15 necessary. Because once you make the turn, the pressure is going to
16 rise and it's going to drop due to the new lower power. So he might
17 have to take various actions to control pressure in the pressurizer.
18 Basically, no I don't feel it's extremely difficult to carry out the
19 functions of that.

20
21 R. MARTIN: Okay. You don't t. it's hectic.
22
23
24
25

1 MCGOVERN: Well any incident is going to be hectic. Any type of trip
2 or a transient. Yes, it's hectic, of course, it is. I mean you don't
3 trip....
4

5 T. MARTIN: Had you been exposed to a transient of this type of a
6 simulator?
7

8 MCGOVERN: Yes sir.
9

10 T. MARTIN: You felt that that trip doesn't bother you in particular?
11

12 MCGOVERN: I would say that by the end of the simulator training, I'd,
13 that, you know, it was well within the capabilities of myself or any
14 operator that had been through similar training to handle it.
15

16 T. MARTIN: What I want to look now at--at your training, specifically,
17 what training you have received recently from the company. Do you
18 remember the last time you received formal training from this company,
19 any type at all, one, two, three hours. I don't care what it is.
20

21 MCGOVERN: Well, do you count last week?
22

23 T. MARTIN: Okay. Tell me about last week.
24
25

1 MCGOVERN: I spent nine hours on an off scheduled day training on new
2 systems that have just come in. More or less, it's a recovery training
3 program. To get us up to speed on what's going on around the plant,
4 the various systems that they are putting in; the plans behind the
5 various systems; controlling stations, etc., etc.

6
7 T. MARTIN: Okay. Let me focus on a period before this event. Do you
8 remember any training that you had shortly before the event?
9

10 MCGOVERN: Well, I have just recently finished the training program.
11 Its a nine month CRO training program. You know, I was heavily involved
12 with the training department in the sense that their training program,
13 I think its an extremely good training program for CROs.
14

15 T. MARTIN: When did you complete that specific block of training.
16

17 MCGOVERN: It culminates in the licensing of the operator which in my
18 case was November 1978.
19

20 T. MARTIN: From November 1978 until the event, did you receive any
21 formal training?
22
23
24
25

1 MCGOVERN: Yes sir, we have training week lectures. We are on a six
2 shift schedule. One of the weeks is an actual training week and during
3 that time, at least two or three of those days will be devoted to
4 lectures of one nature or another. Either a view type thing, emergency
5 procedure recalls, preparation for recall exams, one thing or another.
6

7 T. MARTIN: Let me ask you some specifics. Does Category E, Review 2,
8 mean anything to you?
9

10 MCGOVERN: Category E, Review 2? Not really, right off the top of my
11 head, I'd have to ...
12

13 T. MARTIN: How about industrial waste treatment systems? Does that
14 mean anything to you? Do you remember receiving any training in that
15 recently?
16

17 MCGOVERN: Yes, sir.
18

19 T. MARTIN: Work request procedure?
20

21 MCGOVERN: Yes, sir.
22

23 T. MARTIN: Water and waste treatment systems?
24
25

1 MCGOVERN: Yes, sir.
2

3 T. MARTIN: You remember those and they were fairly recent?
4

5 MCGOVERN: Yes, sir.
6

7 T. MARTIN: At this point, I guess I have finished with my specific
8 questions. I would now like to explore any areas that you think maybe
9 we should have asked some questions that will help us understand the
10 scenario. Or, if you don't have any of those, or even if you do, after
11 that, do you have any comments about this event, about the way it was
12 handled by Med Ed, by NRC, by State, by others and would like to put it
13 on record whether it was complimentary or not, the floor is yours, sir.
14 So please indulge.
15

16 MCGOVERN: I would like to get to the second category first. As far as
17 specific questions that you haven't asked me, if you would, we basically
18 covered the period of time on March 28th when I was in the control room
19 or involved in this system. The second category, however, comments
20 that I have on the way things were handled. I think this period of time
21 right now is a classic example. It's almost 2 months after the time of
22 the trip and this is the first interview I have had with the NRC. I
23 had been interviewed previously and I think it was more a stroke of
24 luck than anything else that one of the engineers from the Metropolitan
25

1 Edison, from the plant itself interviewed me the next night. It was a
2 month after that before I received the first formal interview and this
3 was conducted by GPU. I feel that anytime you are looking for some-
4 thing of this nature, highly detailed information you can't come back
5 60 days later or 45 days later and expect a person to remember exactly
6 what was the pressure at 2:00, what was the level, did this go up and
7 down, was it oscillating? I think that is asking too much of an operator.
8 I really do. Since that time, obviously that was a major incident, and
9 we've had, many actions have been carried out since that time. Its
10 just, I have trouble sorting things after a period of time like that.
11 That's my one comment and my other comment is I think that we were
12 shafted by the media. I'll leave it with that.

13
14 T. MARTIN: You may, can help me here. We are concerned also that it
15 took so long for us to come and interview you specifically. We also
16 did not want to jeopardize the plant by taking away valuabl trained men
17 from the recovery operation as long as the plant might put the public
18 in jeopardy. Can you suggest any mechanism that we might have, or
19 could use in the future, maybe through other regulations that would
20 capture that information. Can you suggest something that we might
21 utilize?
22
23
24
25

1 MCGOVERN: I think maybe, I don't know how well it would work, but
2 maybe a tape recorder in the control room. When things start happening
3 rapidly there is no time to sit and write in the log book, there's just
4 not. Maybe a tape recorder just for emergency use. Okay, the FAA's
5 got them for pilots. If things are going to happen, the pilot puts on
6 his tape and there you are. Things can happen just as rapidly in a
7 nuclear power plant and I think it would be a good idea if you had some
8 way, if you could just sit there and say hey throttle ... 16 for a 100
9 gallons times 14 up to and keep on about your business. You could
10 catch the tone of the conversation. You could catch what's going on in
11 the control. I think that would be 10 times better than trying to
12 reconstruct it two months later.

13
14 T. MARTIN: Do you think it might be possible following other events of
15 this type, and hopefully there never is one, but any major event that
16 might need documentation and understanding that formal statements of
17 all people involved, the guy sits down as soon as he's able to be
18 relieved and writes down what he remembers, do you think that would
19 help?

20
21 MCGOVERN: It certainly wouldn't hurt. As I had mentioned before, one
22 of the engineers basically did that with me. At 3:00 on the 29th, I
23 sat down with the engineer and he took a transcript of what I remem-
24 bered of the March the 28th and what happened. And I, since look back
25

1 at it and say, oh yeah, I remember doing that. Oh yes, that provides
2 me with a little more detail than trying to remember two months later
3 what happened. Yes, I'd say that would probably be a big help.
4

5 T. MARTIN: Hugh, do you have any other comments?
6

7 MCGOVERN: No, sir.
8

9 T. MARTIN: Hugh, I have no further questions and I really appreciate
10 your candid comments and the information you gave us on the sequence.
11 If no one else has any questions, I think I'll turn it back over to
12 Owen.
13

14 SHACKLETON: Hugh, thank you very much and your recall is far above
15 average and we really appreciate the time you have given us on behalf
16 of the Commission. We thank you and will bring this interview to a
17 close. The time is now 6:32 p.m., eastern daylight time.
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